

WHAT IS CLAIMED IS:

1. An apparatus for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a
5 fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, the apparatus comprising:

a system pressure sensor for detecting a pressure of the evaporated fuel processing system;

10 an atmospheric pressure sensor for detecting an atmospheric pressure;

a control unit connected to the system pressure sensor and the atmospheric pressure sensor, the control unit configured to:

detect a stop of the engine;

15 correct a determination value according to the atmospheric pressure;

close the evaporated fuel processing system after the stop of the engine is detected; and

20 determine whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the pressure detected by the system pressure sensor and the corrected determination value.

25 2. The apparatus of claim 1, wherein the control unit is further configured to:

monitor the pressure detected by the system pressure sensor;

determine a change in the pressure detected by the system pressure sensor; and

determine that the evaporated fuel processing system has leakage if

the change in the pressure detected by the system pressure sensor is less than the corrected determination value.

3. The apparatus of claim 1, wherein the correction for the
5 determination value is made so that the determination value is made larger as the atmospheric pressure decreases.

4. The apparatus of claim 1, further comprising a table in which a coefficient corresponding to the atmospheric pressure is defined,

10 wherein the control unit is further configured to:

retrieve the coefficient corresponding to the atmospheric pressure from the table; and

correct the determination value with the retrieved coefficient.

15

5. The apparatus of claim 1, wherein the control unit is further configured to:

open the evaporated fuel processing system to the atmosphere if the stop of the engine is detected;

20 close the evaporated fuel processing system over a first determination period;

determine a maximum value of the pressure detected by the system pressure sensor during the first determination period;

25 open the evaporated fuel processing system to the atmosphere after the first determination period elapses;

close the evaporated fuel processing system over a second determination period;

determine a minimum value of the pressure detected by the system pressure sensor during the second determination period; and

determine that the evaporated fuel processing system has leakage if a difference between the maximum value and the minimum value is less than the corrected determination value.

5 6. An apparatus for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, the apparatus comprising:

10 a system pressure sensor for detecting a pressure of the evaporated fuel processing system;

 an atmospheric pressure sensor for detecting an atmospheric pressure;

15 a control unit connected to the system pressure sensor and the atmospheric pressure sensor, the control unit configured to:

 detect a stop of the engine;

 correct the pressure detected by the system pressure sensor according to the atmospheric pressure;

20 close the evaporated fuel processing system after the stop of the engine is detected; and

 determine whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the corrected pressure and a determination value.

25 7. The apparatus of claim 6, wherein the control unit is further configured to:

 monitor the corrected pressure;

 determine a change in the corrected pressure; and

 determine that the evaporated fuel processing system has leakage if

the change in the corrected pressure is less than the determination value.

8. The apparatus of claim 6, wherein the correction for the pressure detected by the system pressure sensor is made so that the pressure is
5 made lower as the atmospheric pressure decreases.

9. The apparatus of claim 6, further comprising a table in which a coefficient corresponding to the atmospheric pressure is defined,
wherein the control unit is further configured to:

10 retrieve the coefficient corresponding to the atmospheric pressure from the table; and

correct the pressure detected by the system pressure sensor with the retrieved coefficient.

15 10. The apparatus of claim 6, wherein the control unit is further configured to:

open the evaporated fuel processing system to the atmosphere if the stop of the engine is detected;

20 close the evaporated fuel processing system over a first determination period;

determine a maximum value of the corrected pressure during the first determination period;

open the evaporated fuel processing system to the atmosphere after the first determination period elapses;

25 close the evaporated fuel processing system over a second determination period;

determine a minimum value of the corrected pressure during the second determination period; and

determine that the evaporated fuel processing system has leakage if

a difference between the maximum value and the minimum value is less than the determination value.

11. A method for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, comprising the steps of:

detecting a pressure of the evaporated fuel processing system;
detecting an atmospheric pressure;
detecting a stop of the engine;
correcting a determination value according to the atmospheric pressure;

closing the evaporated fuel processing system after the stop of the engine is detected; and

determining whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the detected pressure of the evaporated fuel processing system and the corrected determination value.

20 12. The method of claim 11, further comprising the steps of:
monitoring the pressure of the evaporated fuel processing system;
determining a change in the pressure of the evaporated fuel processing system; and
determining that the evaporated fuel processing system has leakage
25 if the change in the pressure of the evaporated fuel processing system is less than the corrected determination value.

13. The method of claim 11, wherein the step of correcting the determination value further comprises the step of:

correcting the determination value so that the determination value is made larger as the atmospheric pressure decreases.

14. The method of claim 11, further comprising the steps of:

5 accessing a table in which a coefficient corresponding to the atmospheric pressure is defined;

retrieving the coefficient corresponding to the atmospheric pressure from the table; and

correcting the determination value with the retrieved coefficient.

10

15. The method of claim 11, further comprising the steps of:

opening the evaporated fuel processing system to the atmosphere if the stop of the engine is detected;

15 closing the evaporated fuel processing system over a first determination period;

determining a maximum value of the pressure of the evaporated fuel processing system during the first determination period;

opening the evaporated fuel processing system to the atmosphere after the first determination period elapses;

20 closing the evaporated fuel processing system over a second determination period;

determining a minimum value of the pressure of the evaporated fuel processing system during the second determination period; and

25 determining that the evaporated fuel processing system has leakage if a difference between the maximum value and the minimum value is less than the corrected determination value.

16. A method for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank

to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, comprising the steps of:

detecting a pressure of the evaporated fuel processing system;

detecting an atmospheric pressure;

5 detecting a stop of the engine;

correcting the detected pressure of the evaporated fuel processing system according to the atmospheric pressure;

closing the evaporated fuel processing system after the stop of the engine is detected; and

10 determining whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the corrected pressure and a determination value.

17. A computer program stored on a computer readable medium for use
15 in determining leakage in an evaporated fuel processing system, the
evaporated fuel processing system extending from a fuel tank to a purge
passage through which evaporated fuel from the fuel tank is purged to an
intake manifold of an engine, the computer program comprising:

20 program code for receiving a pressure of the evaporated fuel
processing system from a system pressure sensor;

program code for receiving an atmospheric pressure from an
atmospheric pressure sensor;

program code for detecting a stop of the engine;

25 program code for correcting a determination value according to the
atmospheric pressure;

program code for closing the evaporated fuel processing system after
the stop of the engine is detected; and

program code for determining whether the evaporated fuel processing system
processing system has leakage after the evaporated fuel processing system

is closed based on the pressure of the evaporated fuel processing system and the corrected determination value.

18. The computer program of claim 17, further comprising:

5 program code for monitoring the pressure of the evaporated fuel processing system;

program code for determining a change in the pressure of the evaporated fuel processing system; and

10 program code for determining that the evaporated fuel processing system has leakage if the change in the pressure is less than the corrected determination value.

19. The computer program of 18, wherein program code for correcting the determination value further comprises program code for correcting the 15 determination value so that the determination value is made larger as the atmospheric pressure decreases.

20. The computer program of claim 17, wherein the computer readable medium further stores a table in which a coefficient corresponding to the 20 atmospheric pressure is defined,

wherein the computer program further comprises:

program code for retrieving the coefficient corresponding to the atmospheric pressure from the table; and

25 program code for correcting the determination value with the retrieved coefficient.

21. The computer program of claim 17,

program code for opening the evaporated fuel processing system to the atmosphere if the stop of the engine is detected;

program code for closing the evaporated fuel processing system over a first determination period;

program code for determining a maximum value of the pressure of the evaporated fuel processing system during the first determination period;

program code for opening the evaporated fuel processing system to the atmosphere after the first determination period elapses;

program code for closing the evaporated fuel processing system over a second determination period;

program code for determining a minimum value of the pressure of the evaporated fuel processing system during the second determination period; and

program code for determining that the evaporated fuel processing system has leakage if a difference between the maximum value and the minimum value is less than the corrected determination value.

22. A computer program stored on a computer readable medium for use in determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, the computer program comprising:

program code for detecting a pressure of the evaporated fuel processing system;

program code for detecting an atmospheric pressure;

program code for detecting a stop of the engine;

program code for correcting the detected pressure of the evaporated fuel processing system according to the atmospheric pressure;

program code for closing the evaporated fuel processing system after the stop of the engine is detected; and

program code for determining whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the corrected pressure and a determination value.

5 23. An apparatus for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, the apparatus comprising:

10 means for detecting a pressure of the evaporated fuel processing system;

 means for detecting an atmospheric pressure;

 means for detecting a stop of the engine;

15 means for correcting a determination value according to the atmospheric pressure;

 means for closing the evaporated fuel processing system after the stop of the engine is detected; and

20 means for determining whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed based on the pressure detected by the system pressure sensor and the corrected determination value.

24. The apparatus of claim 23, further comprising:

25 means for monitoring the pressure of the evaporated fuel processing system;

 means for determining a change in the pressure of the evaporated fuel processing system; and

 means for determining that the evaporated fuel processing system has leakage if the change in the pressure of the evaporated fuel processing

system is less than the corrected determination value.

25. The apparatus of claim 23, wherein the means for correcting a determination value further comprises means for correcting the determination value so that the determination value is made larger as the atmospheric pressure decreases.

26. The apparatus of claim 23, further comprising:
means for accessing a table in which a coefficient corresponding to
10 the atmospheric pressure is defined,
means for retrieving the coefficient corresponding to the atmospheric pressure from the table; and
means for correcting the determination value with the retrieved coefficient.

15

27. The apparatus of claim 23, further comprising:
means for opening the evaporated fuel processing system to the atmosphere if the stop of the engine is detected;
means for closing the evaporated fuel processing system over a first
20 determination period;
means for determining a maximum value of the pressure of the evaporated fuel processing system during the first determination period;
means for opening the evaporated fuel processing system to the atmosphere after the first determination period elapses;
means for closing the evaporated fuel processing system over a second determination period;
means for determining a minimum value of the pressure of the evaporated fuel processing system during the second determination period;
and

means for determining that the evaporated fuel processing system has leakage if a difference between the maximum value and the minimum value is less than the corrected determination value.

5 28. An apparatus for determining leakage in an evaporated fuel processing system, the evaporated fuel processing system extending from a fuel tank to a purge passage through which evaporated fuel from the fuel tank is purged to an intake manifold of an engine, the apparatus comprising:

10 means for detecting a pressure of the evaporated fuel processing system;

 means for detecting an atmospheric pressure;

 means for detecting a stop of the engine;

15 means for correcting the detected pressure of the evaporated fuel processing system according to the atmospheric pressure;

 means for closing the evaporated fuel processing system after the stop of the engine is detected; and

 means for determining whether the evaporated fuel processing system has leakage after the evaporated fuel processing system is closed

20 based on the corrected pressure and a determination value.